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Application Number:	10796424
International Application Number:	
Confirmation Number:	1883
Title of Invention:	Feedstock composition and method of using same for powder metallurgy forming of reactive metals
First Named Inventor/Applicant Name:	Eric A. Nyberg
Customer Number:	29171
Filer:	Allan C . Tuan
Filer Authorized By:	
Attorney Docket Number:	14185-B
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Application Type:	Utility under 35 USC 111(a)

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Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1		response.pdf	138893 4e4a968c017a3af7212c9c1284116607cc032b05	yes	11
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment After Final		1	1	
	Claims		2	9	
	Applicant Arguments/Remarks Made in an Amendment		10	11	
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	cert.pdf	17188 c78d8ee79fdf226065725e1e117bfc777479976cc	no	1
Warnings:					
Information:					
3	Fee Worksheet (PTO-06)	fee-info.pdf	8341 7b6ced1557bda4ce56cf60f3df31e5ce84e020b0	no	2
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eFiled Application Information

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Title	Feedstock composition and method of using same for powder metallurgy forming of reactive metals
First Named Inventor	Eric A. Nyberg
Customer Number or Correspondence Address	29171
Filed By	Allan C . Tuan
Attorney Docket Number	14185-B
Filing Date	08-MAR-2004
Receipt Date	10-SEP-2007
Application Type	Utility under 35 USC 111 (a)

Application Details

Submitted Files	Page Count	Document Description	File Size	Warnings
response.pdf	11		138893 bytes	PASS

Document Description	Page Start	Page End
Amendment After Final	1	1
Claims	2	9
Applicant Arguments/Remarks Made in an Amendment	10	11

cert.pdf	1	Miscellaneous Incoming Letter	17188 bytes	PASS
fee-info.pdf	2	Fee Worksheet (PTO-06)	8341 bytes	PASS

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	Art Unit: 1742
Eric A. Nyberg, et al.	)	Examiner: Ngoclan Thi Mai
Serial No: 10/796,424	)	Confirmation No.: 1883
Filed: 3/8/2004	)	File No: 14185-B
For: Feedstock composition and method of using same for powder metallurgy forming of reactive metals	)	Date: September 10, 2007

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Signature

Sept. 10, 2007
Date Deposited

Allan C. Tuan K1-53
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PATENT
File No. 14185-B

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Eric A. Nyberg, et al.	)	Date: 9/10/2007
S. N.: 10/796,424	)	Art Unit: 1742
Filed: 03/08/2004	)	Examiner: Ngoclan Thi Mai
For: Feedstock composition and method of using same for powder metallurgy forming of reactive metals	)	Confirmation No: 1883
	)	Our Ref. No: 14185-B

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

This responds to the Office Action dated May 17, 2007 for the above-referenced application. A petition and the fee for a one month extension of time, believed to be about $110, are provided herewith. In the event that additional extensions of time are necessary, then such extensions of time are hereby petitioned under 37 CFR § 1.136(a); and any fees required for consideration of this paper and any papers associated with it (including fees for net addition of claims) are hereby authorized to be charged to Deposit Account No. 02-1275. Please amend the application as follows:

Amendments to the Claims are reflected in the listing of claims, which begins on page 2.

Remarks begin on page 10.

Listing of Claims

1. (Currently Amended): A composition comprising a metal powder and an aromatic binder,

wherein said metal powder comprises an elemental metal that is a getter material;

wherein said aromatic binder and said metal powder are mixed to form a feedstock for powder metallurgy forming techniques, said feedstock comprising ~~less than~~ approximately ~~40 vol%~~ 29 vol% to approximately 37 vol% of said aromatic binder and no additional binders in an amount totaling greater than 10 vol%; and

wherein said aromatic binder and said metal powder do not chemically interact with one another to form property-degrading impurities in articles resulting from application of the powder metallurgy forming techniques to the feedstock.

2. (Original): The composition as recited in Claim 1, wherein said powder metallurgy forming techniques are selected from the group consisting of injection molding, extrusion, compression molding, powder rolling, blow molding, laser forming, isostatic pressing, spray forming, and combinations thereof.

3. (Canceled)

4. (Previously Presented): The composition as recited in Claim 1, wherein said aromatic binder comprises a polycyclic aromatic.

5. (Original): The composition as recited in Claim 4, wherein said polycyclic aromatic is selected from the group consisting of naphthalene, anthracene, pyrene, phenanthrenequinone, and combinations thereof.

6. (Currently Amended): ~~The composition as recited in Claim 1, wherein said aromatic binder comprises benzene and naphthalene.~~

A composition comprising a metal powder and an aromatic binder,

wherein said metal powder comprises an elemental metal that is a getter material and said aromatic binder comprises benzene and naphthalene;

wherein said aromatic binder and said metal powder are mixed to form a feedstock for powder metallurgy forming techniques, said feedstock comprising less than approximately 40 vol% of said aromatic binder and no additional binders in an amount totaling greater than 10 vol%; and

wherein said aromatic binder and said metal powder do not chemically interact with one another to form property-degrading impurities in articles resulting from application of the powder metallurgy forming techniques to the feedstock.

7. (Canceled)

8. (Canceled)

9 – 23. (Canceled)

24. (Original): The composition as recited in Claim 1, wherein said metal powder comprises at least approximately 45% by volume of said feedstock.

25. (Canceled)

26. (Original): The composition as recited in Claim 1, wherein said metal powder comprises approximately 54.6% to 70% by volume of said feedstock.

27. (Currently Amended): ~~The composition as recited in Claim 1, wherein said additional binder comprises a polymer.~~

A composition comprising a metal powder and an aromatic binder,

wherein said metal powder comprises an elemental metal that is a getter material;

wherein said aromatic binder and said metal powder are mixed to form a feedstock for powder metallurgy forming techniques, said feedstock comprising less than approximately 40 vol% of said aromatic binder and no greater than 10 vol% of a polymer as an additional binder; and

wherein said aromatic binder and said metal powder do not chemically interact with one another to form property-degrading impurities in articles resulting from application of the powder metallurgy forming techniques to the feedstock.

28. (Canceled)

29. (Original): The composition as recited in Claim 27, wherein said polymer comprises a thermoplastic polymer.

30. (Original): The composition as recited in Claim 29, wherein said thermoplastic polymer is selected from the group consisting of ethylene vinyl acetate, polyethylene, butadiene-based polymers, and combinations thereof.

31. (Original): The composition as recited in Claim 27, wherein said polymer comprises a thermoset polymer.

32. (Original): The composition as recited in Claim 31, wherein said thermoset polymer is selected from the group consisting of polymethylmethacrylates, epoxies, unsaturated polyesters, and combinations thereof.

33. (Original): The composition as recited in Claim 27, wherein said polymer comprises a polymer mixture of at least one thermoplastic polymer and at least one thermoset polymer.

34. (Original): The composition as recited in Claim 33, wherein said thermoplastic polymer comprises approximately 2.1% to 5.1% by volume of said feedstock.

35. (Original): The composition as recited in Claim 33, wherein said thermoset polymer comprises approximately 2.3% by volume of said feedstock.

36. (Cancelled)

37. (Original): The composition as recited in Claim 33, wherein said polymer mixture comprises approximately 4.4% by volume of said feedstock.

38. (Currently Amended): ~~The composition as recited in Claim 1, further comprising a surfactant.~~

A composition comprising a metal powder, an aromatic binder, and a surfactant,

wherein said metal powder comprises an elemental metal that is a getter material;

wherein said aromatic binder, said surfactant, and said metal powder are mixed to form a feedstock for powder metallurgy forming techniques, said feedstock comprising less than approximately 40 vol% of said aromatic binder and no additional binders in an amount totaling greater than 10 vol%; and

wherein said aromatic binder and said metal powder do not chemically interact with one another to form property-degrading impurities in articles resulting from application of the powder metallurgy forming techniques to the feedstock.

39. (Original): The composition as recited in Claim 38, wherein said surfactant comprises a nonionic surfactant.

40. (Canceled)

41. (Previously Presented): A composition comprising an aromatic binder, a surfactant, and a metal powder,

wherein said metal powder comprises an elemental metal that is a getter material; and

wherein said aromatic binder, said surfactant, and said metal powder are mixed to form a feedstock for powder metallurgy forming techniques, said surfactant comprising up to approximately 3% of the volume of said feedstock.

42. (Previously Presented): The composition as recited in Claim 41, wherein said surfactant comprises approximately 2.3% of the volume of said feedstock.

43. (Currently Amended): ~~The composition as recited in Claim 1, further comprising a lubricant.~~

A composition comprising a metal powder, an aromatic binder, and a lubricant,

wherein said metal powder comprises an elemental metal that is a getter material;

wherein said aromatic binder, said lubricant, and said metal powder are mixed to form a feedstock for powder metallurgy forming techniques, said feedstock comprising less than approximately 40 vol% of said aromatic binder and no additional binders in an amount totaling greater than 10 vol%; and

wherein said aromatic binder and said metal powder do not chemically interact with one another to form property-degrading impurities in articles resulting from application of the powder metallurgy forming techniques to the feedstock.

44. (Original): The composition as recited in Claim 43, wherein said lubricant is selected from the group consisting of organic fatty acids, metallic salts, solid waxes and combinations thereof.

45. (Original): The composition as recited in Claim 44, wherein said organic fatty acid is selected from the group comprising stearic acid, branched versions of stearic acid, substituted versions of stearic acid, and combinations thereof.

46. (Original): The composition as recited in Claim 44, wherein said metallic salts are selected from the group consisting of sodium stearate, calcium stearate, and combinations thereof.

47. (Original): The composition as recited in Claim 44, wherein said solid waxes are selected from the group consisting of microcrystalline waxes, parrafin waxes, carnuba wax, and combinations thereof.

48. (Original): The composition as recited in Claim 43, wherein said lubricant comprises up to approximately 3% of the volume of said feedstock.

49. (Original): The composition as recited in Claim 43, wherein said lubricant comprises approximately 1.5% of the volume of said feedstock.

50. (Currently Amended): ~~The composition as recited in Claim 1, further comprising at least one additional metal powder.~~

A composition comprising a first metal powder, an aromatic binder, and at least one additional metal powder,

wherein said first metal powder comprises an elemental metal that is a getter material;

wherein said aromatic binder, said first metal powder, and said at least one additional metal powder are mixed to form a feedstock for powder metallurgy

forming techniques, said feedstock comprising less than approximately 40 vol% of said aromatic binder and no additional binders in an amount totaling greater than 10 vol%; and

wherein said aromatic binder and said first metal powder do not chemically interact with one another to form property-degrading impurities in articles resulting from application of the powder metallurgy forming techniques to the feedstock.

51. (Original): The composition as recited in Claim 50, wherein said additional metal powder comprises a sintering aid.

52. (Original): The composition as recited in Claim 51, wherein said sintering aid comprises silver.

53. (Original): The composition as recited in Claim 50, wherein said additional metal powder comprises an alloying powder.

54 – 151. (Canceled)

152. (Previously Presented): A composition comprising a metal powder, an aromatic binder, and an additional metal powder comprising a sintering aid,

wherein said metal powder comprises an elemental metal that is a getter material and said sintering aid comprises silver; and

wherein said aromatic binder and said metal powder are mixed to form a feedstock for powder metallurgy forming techniques, said feedstock comprising less than approximately 40 vol% of said aromatic binder and no additional binders in an amount totaling greater than 10 vol%.

153. (New): The composition as recited in Claim 6, wherein said aromatic binder comprises approximately 29% to 37% by volume of said feedstock.

154. (New): The composition as recited in Claim 6, wherein said metal powder comprises at least approximately 45% by volume of said feedstock.

155. (New): The composition as recited in Claim 6, wherein said metal powder comprises approximately 45% to 95% by volume of said feedstock.

156. (New): The composition as recited in Claim 6, wherein said metal powder comprises approximately 54.6% to 70% by volume of said feedstock.

Remarks

Applicants thank the Examiner for examining the present application, for allowing Claims 41, 42, and 152, and for finding that Claims 6, 8, 27, 29-35, 37-39, and 43-53 contain allowable subject matter. With entry of this amendment, Claims 1, 2, 4-6, 24, 26-27, 29-35, 37-39, 41-53, and 152-156 remain.

The Examiner has objected to Claims 6, 8, 27, 29-35, 37-39, and 43-53 as being dependent upon a rejected base claim, but has stated that such claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Accordingly, Claim 1 has been amended to incorporate the limitations of Claim 8. Claim 8 has been canceled as being redundant. Claim 25 has also been canceled to avoid conflicting composition ranges between currently amended Claim 1 and Claim 25. Similarly, currently amended Claims 6, 27, 38, 41, 43, and 50 have been rewritten as independent claims incorporating the limitations of the claims from which they previously depended. Dependent claims 2, 4, 5, 24, 26, 29-35, 37, 39, 42-49, and 51-53 are also in condition for allowance for depending from allowable base claims as well as for their own respective features, which are neither shown nor suggested by the cited art. No new matter has been introduced by the instant amendments.

Applicants hereby add new Claims 153-156, all of which depend from currently amended Claim 6. The limitations in all four claims have been previously presented in claims that depended from Claim 1 and are added here to alter their dependency as a result of the amendment of Claim 6 to independent form. In the prior Office action response/amendment, dated March 12, 2007, they were presented as Claims 8 and 24-26. Accordingly, no new matter is introduced. As dependents from currently amended Claim 6, which was found by the Examiner to contain allowable subject matter, Applicants

believe that new Claims 153-156 are also in condition for allowance for at least the reasons described by the Examiner as well as for their own respective features, which are neither shown nor suggested by the cited art.

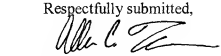
Applicant believes that the application is in condition for allowance and respectfully requests timely issuance of a notice of allowance.

Conclusion

For the reasons recited above, the application is believed to be in condition for allowance. Therefore, Applicants respectfully request that a timely Notice of Allowance be issued in this case.

With entry of this amendment, the number of independent claims has increased to eight. Accordingly, fees are due for five excess independent claims. When the application was originally filed, the applicants qualified for small entity status. The application has since been licensed and can no longer claim small entity status. The large entity fee for five excess independent claims is believed to be $1,000 and is provided herewith. If any additional fees may be required in connection with filing this amendment and any extension of time, the Director is hereby authorized to charge our Deposit Account No. 02-1275.

Respectfully submitted,



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